

REMARKS

This Communication is responsive to the Office Action dated March 16, 2009. The claims are not amended by way of this communication. Claims 1-44 remain pending.

Specification

In the Office Action, the Examiner maintained an objection to the specification, indicating that the specification failed to provide proper antecedent basis for the claimed subject matter, namely a "computer-readable storage medium." It is unclear to Applicant why this objection was maintained, considering that Applicant amended claims 53-65 in the previous Amendment to recite a "processor-readable storage medium." As stated in the previous Amendment, support may be found in Applicant's disclosure at least in paragraph [0060]. Applicant again requests that the objection be removed.

Claim Rejections – 35 U.S.C. § 101

In the Office Action, the Examiner maintained the rejection of claims 53-65 under 35 U.S.C. § 101, continuing to assert that "instructions" are nonfunctional descriptive material recorded on some computer-readable medium, in a computer or on an electromagnetic carrier signal. The Examiner stated that the subject matter of claims 53-65 is not statutory because no requisite functionality is present to satisfy the practical application requirement. The Examiner also stated that merely claiming nonfunctional descriptive material, i.e., abstract ideas, stored on a computer-readable medium, in a computer, or on an electromagnetic carrier signal, does not make it statutory. Applicant again traverses the rejection.

In the Response to Arguments, the Examiner stated that the instructions are nonfunctional descriptive material "because the 'instructions' can be a writing [sic] description for someone to do something and stored in the storage device, when the person retrieves the 'instructions' from the storage device, the 'instructions' is [sic] displayed on the monitor for reading. This shows that the 'instructions is [sic] non-functional descriptive material." It is not clear to Applicant on what basis the Examiner is making this argument. The subject matter of claims 53-65 is directed to a processor-readable storage medium comprising instructions that *when executed by a processor* cause the processor to perform several acts. None of claims 53-65 are directed to displaying instructions on a monitor to be read by a person. Whether or not

claims directed to displaying instructions on a monitor to be read by a person comprises statutory material is irrelevant to the examination of the present application.

The subject matter of claims 53-65 is statutory, as indicated by both the MPEP and case law. Claim 53 recites the following:

A processor-readable storage medium comprising instructions that when executed by a processor cause the processor to:
 use texture information in a portion of a video frame to determine whether the portion comprises at most a predetermined amount of spatial information; and
 categorize the portion as nonpredictive if the texture information indicates that the portion comprises at most the predetermined amount of spatial information:
 if the texture information indicates that the portion does not comprise at most a predetermined amount of spatial information, then:
 use motion information to determine whether the portion comprises at least a predetermined amount of predictive information.

As seen above, claim 53 is directed to a processor-readable storage medium comprising instructions that when executed by a processor cause the processor to perform several acts.

As argued in the previous Amendment, the arguments in that Amendment being incorporated by reference in their entirety, the MPEP *specifically* instructs Examiners to treat claims such as claim 53 as *product* claims. For example, MPEP § 2106 states

Since a computer program is merely a set of instructions capable of being executed by a computer, the computer program itself is not a process and USPTO personnel should treat a claim for a computer program, without the computer-readable medium needed to realize the computer program's functionality, as nonstatutory functional descriptive material. When a computer program is claimed in a process where the computer is executing the computer program's instructions, USPTO personnel should treat the claim as a process claim. **When a computer program is recited in conjunction with a physical structure, such as a computer memory, USPTO personnel should treat the claim as a product claim** (emphasis added.)

In claim 53, Applicant has recited instructions in conjunction with a physical structure, namely a "processor-readable storage medium." Based on the MPEP, the Examiner should treat claim 53 as a product claim. It is unclear to Applicant why the Examiner continues to ignore the guidelines specifically communicated to Examiners in the MPEP.

Finally, Applicant notes that numerous patents have been granted on computer programs recited in conjunction with a physical memory. For example, as of April 24, 2009, 6458 U.S. Patents have issued with claims reciting “computer-readable storage medium.” As another example, as of April 24, 2009, 51 U.S. patents have issued with claims directed to a “processor-readable storage medium.” Claims 53-65 are directed to statutory subject matter. Applicant requests that the Examiner withdraw the rejection.

Claim Rejections – 35 U.S.C. § 102

In the Office Action, claims 1-3, 6-8, 11-12, 23, 26, 28-29, 31, 46-47, 49, 51, 53-54, 59 and 61 were rejected under 35 U.S.C. § 102(b) as being anticipated by Kuchibholta (US 5,731,835, hereafter “Kuchibholta”). Applicant traverses the rejection. The applied reference fails to disclose each and every feature of the claimed invention, as required by 35 U.S.C. § 102(b), and provides no teaching that would have suggested the desirability of modification to include such features.

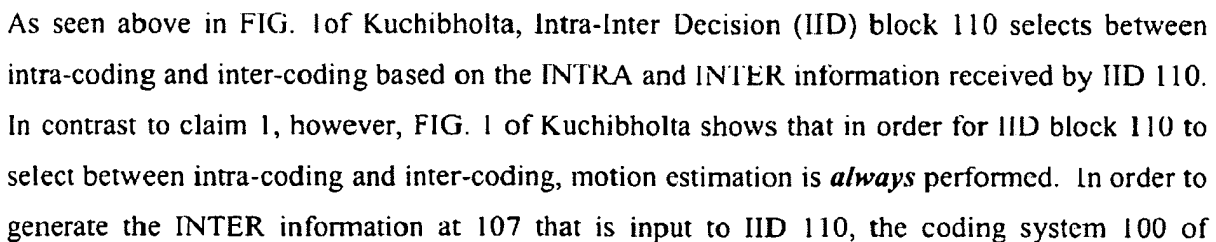
Claims 1-3

For example, Kuchibholta fails to teach or suggest all the elements of claim 1. Claim 1 recites the following:

Method for categorizing in a video encoder a portion of a video frame, comprising:
 using texture information in the portion to determine whether the portion comprises at most a predetermined amount of spatial information;
 if the texture information indicates that the portion comprises at most the predetermined amount of spatial information, then categorizing the portion as nonpredictive; and
 if the texture information indicates that the portion does not comprise at most a predetermined amount of spatial information, then:
 using motion information to determine whether the portion comprises at least a predetermined amount of predictive information.

Claim 1 is directed to a method that uses ***motion information*** to determine whether a portion of a video frame comprises at least a predetermined amount of predictive information ***if it is first determined*** that ***texture information*** indicates that the portion does not comprise at most a predetermined amount of spatial information. As such, per the method of claim 1, ***use of motion***

FIG. 1 of Kuchihholta is reproduced immediately below:



² *Id.* at paragraph [0033].

Kuchibholta *must* generate motion vectors via motion vector predictor 126. Then, subtractor 106 subtracts the predicted macroblock (that was predicted using the generated motion vectors) from the input macroblock, thereby producing a residual macroblock.³ IID 110 calculates the variance of the residual macroblock and the variance of the input macroblock in order to determine whether to code the macroblock using intra-coding or inter-coding.⁴ FIG. 1 thus shows that, in order for IID 110 to make a coding decision, motion estimation *must* be performed.

The fact that Kuchibholta *requires* motion estimation to be performed in every coding mode decision is further expressed in Kuchibholta's specification. Kuchibholta states that the "MPEG encoder system discussed above is a *conventional* system that is available as a set of integrated circuits as model L64120 from LSI Logic, Inc. of Milpitas, Calif.,"⁵ (emphasis added). Further, Kuchibholta states that "in a *typical* MPEG encoder, the *actual IID decision is made after* the half-pel *motion vectors are generated* and best motion vector is chosen,"⁶ (emphasis added). Thus, the coding system in Kuchibholta is a *typical* coding system that *always* uses motion estimation in order to make a coding mode decision, i.e., a decision whether to inter-code or intra-code a block.

The Kuchibholta disclosure is contrasted against claim 1, where the *use of motion information* to determine whether the portion comprises at least a predetermined amount of predictive information *is conditioned on the prior determination that the texture information* indicates that the portion does not comprise at least a predetermined amount of spatial information. The features of claim 1 allow the present invention to selectively bypass motion estimation and compensation calculations, unlike the device in Kuchibholta. Thus, Kuchibholta fails to teach or suggest all the elements of claim 1. By virtue of their dependency, claims 2-3 incorporate all the elements of claim 1 and add additional features. Applicant requests that the rejection be withdrawn and that claims 1-3 be allowed.

Furthermore, Kuchibholta fails to teach or suggest all the elements of claim 2. Claim 2 recites, "wherein the texture information comprises texture bits." The Examiner states that Kuchibholta discloses the use of texture bits at element 107. Applicant respectfully disagrees. As indicated above, the INTER information at 107 is the *residual* signal created by subtracting

³ Kuchibholta, col. 3, lines 10-14.

⁴ Id. at col. 3, lines 29-37.

⁵ Id. at col. 4, lines 27-30.

⁶ Id. at col. 4, lines 57-59.

the predicted macroblock from the input macroblock. Texture bits are different from the residual signal.

Claim 6-8, 11-12, and 31

Independent claims 6 and 12 recite elements similar to those recited in independent claim 1. For reasons similar to those presented above with respect to independent claim 1, independent claims 6 and 12 are also novel over Kuchibholta. By virtue of their dependency on either claim 6 or claim 12, claims 7-8, 11, and 31 incorporate all the elements of claim 6 or claim 12, and add additional features. Applicant requests that the rejection be withdrawn and that claims 6-8, 11-12, and 31 be allowed.

Claims 23, 26, 28-29, 46-47, 49, 51, 53-54, 59 and 61

Kuchibholta fails to teach or suggest all the elements of independent claims 23, 26, 28, 46, 49, 53, and 59. Claim 23 is directed to an apparatus for selectively reducing the processing cycles of a video codec, comprising a first complexity control element configured to use texture information of a current macroblock to determine whether to nonpredictively encode the current macroblock, and a second complexity control element configured to, upon determining not to nonpredictively encode the current macroblock based on the texture information, use motion information of the current macroblock to determine whether to predictively encode the current macroblock.

Claim 26 is directed to an apparatus for selectively encoding a current macroblock using nonpredictive encoding or predictive encoding, comprising means for using texture information of the current macroblock to determine whether to nonpredictively encode the current macroblock, and means for using motion information of the current macroblock to determine whether to predictively encode the current macroblock upon determining not to nonpredictively encode the current macroblock based on the texture information.

Claim 28 is directed to an apparatus for categorizing a portion of a video frame, comprising means for using texture information in the portion to determine whether the portion comprises at most a predetermined amount of spatial information, means for categorizing the portion as nonpredictive if the texture information indicates that the portion comprises at most the predetermined amount of spatial information, and means for using motion information to determine whether the portion comprises at least a predetermined amount of predictive

information if the texture information indicates that the portion does not comprise at most the predetermined amount of spatial information.

Claim 46 is directed to an apparatus for categorizing a portion of a video frame comprising a processing element configured to use texture information in the portion to determine whether the portion comprises at most a predetermined amount of spatial information, and categorize the portion as nonpredictive if the texture information indicates that the portion comprises at most the predetermined amount of spatial information, if the texture information indicates that the portion does not comprise at most a predetermined amount of spatial information, then use motion information to determine whether the portion comprises at least a predetermined amount of predictive information.

Claim 49 is directed to an apparatus for categorizing a portion of a video frame, comprising means for determining whether the portion comprises at most a predetermined amount of spatial information based on texture information in the portion, means for categorizing the portion as nonpredictive if the texture information indicates that the portion comprises at most the predetermined amount of spatial information, means for performing a motion estimation search if the texture information indicates that the portion does not comprise at most a predetermined amount of spatial information, means for determining whether the portion comprises at least a predetermined amount of predictive information based on motion information determined during the motion estimation search, wherein the categorizing means categorizes the portion as predictive if the motion information indicates that the portion comprises at least the predetermined amount of predictive information and categorizes the portion as nonpredictive if the motion information indicates that the portion does not comprise at least the predetermined amount of predictive information.

Claim 53 is directed to a processor-readable storage medium comprising instructions that when executed by a processor cause the processor to use texture information in a portion of a video frame to determine whether the portion comprises at most a predetermined amount of spatial information, and categorize the portion as nonpredictive if the texture information indicates that the portion comprises at most the predetermined amount of spatial information, if the texture information indicates that the portion does not comprise at most a predetermined amount of spatial information, then use motion information to determine whether the portion comprises at least a predetermined amount of predictive information.

Claim 59 is directed to a processor-readable storage medium comprising instructions that when executed by a processor cause the processor to use texture information in a portion of a video frame to determine whether the portion comprises at most a predetermined amount of spatial information, categorize the portion as nonpredictive if the texture information indicates that the portion comprises at most the predetermined amount of spatial information, if the texture information indicates that the portion does not comprise at most a predetermined amount of spatial information, then perform a motion estimation search, use motion information determined during the motion estimation search to determine whether the portion comprises at least a predetermined amount of predictive information, if the motion information indicates that the portion comprises at least the predetermined amount of predictive information, then categorize the portion as predictive, and if the motion information indicates that the portion does not comprise at least the predetermined amount of predictive information, then categorize the portion as nonpredictive.

As seen above, independent claims 23, 26, 28, 46, 49, 53, and 59 recite elements similar to elements recited in claim 1. Thus, for reasons similar to those presented above with respect to claim 1, Kuchibholta also fails to teach or suggest all the elements of independent claims 23, 26, 28, 46, 49, 53, and 59. By virtue of their dependency on one of independent claims 23, 26, 28, 46, 49, 53, and 59, dependent claims 29, 47, 51, 54, and 61 incorporate all the elements of the independent claim from which they depend, and add additional features. Applicant requests that the rejection be withdrawn and that claims 23, 26, 28–29, 46–47, 49, 51, 53–54, 59 and 61 be allowed.

Claim Rejections – 35 U.S.C. § 103

In the Office Action, the Examiner rejected claims 4-5, 9-10, 13-14, 30, 35, 42, 48, 50, 55, 60 and 66 under 35 U.S.C. § 103 as being unpatentable over Kuchibholta in view of Kato (US 6,415,055, hereafter “Kato”). In addition, the Examiner rejected claims 15-17, 36-38, 43, 57-58 and 67-68 under 35 U.S.C. § 103 as being unpatentable over Kuchibholta in view of Sun (US 6,041,181, hereafter “Sun”). In addition, the Examiner rejected claims 25, 43 and 44 under 35 U.S.C. § 103 as being unpatentable over Kuchibholta in view of Westermann (US 6,307,886, hereafter “Westermann”). In addition, the Examiner rejected claim 42 under 35 U.S.C. § 103 as being unpatentable over Kuchibholta in view of Westermann as applied to claim 25, and further in view of Kato. In addition, the Examiner rejected claim 45 under 35 U.S.C. § 103 as being

unpatentable over Kuchibholta in view of Westermann as applied to claim 25, and further in view of Sun. In addition, the Examiner rejected claims 32 and 52 under 35 U.S.C. § 103 as being unpatentable over Kuchibholta in view of Kim (US 2002/0196854, hereafter "Kim"). Finally, the Examiner rejected claims 18-22, 24, 27, 33-34, 39-41 and 62-65 under 35 U.S.C. § 103 as being unpatentable over Kuchibholta in view of Kodama et al. (US 5,963,673, hereafter "Kodama"). Applicants respectfully traverse the rejections.

Claims 4-5, 9-10, 13-17, 30, 32, 35-38, 48, 50, 52, 55, 60, and 66

The applied references fail to disclose or suggest the inventions defined by Applicant's claims, and provide no teaching that would have suggested the desirability of modification to arrive at the claimed invention. As argued above, Kuchibholta fails to disclose or suggest all the elements of independent claims 1, 6, 12, 23, 26, 28, 46, 49, 53, and 59. Each of claims 4-5, 9-10, 13-17, 30, 32, 35-38, 48, 50, 52, 55, 60, and 66 depend either directly or indirectly from one of independent claims 1, 6, 12, 23, 26, 28, 46, 49, 53, and 59, making them patentable as well over Kuchibholta. The addition of any disclosure in Kato, Sun, Westermann, and/or Kim does nothing to remedy the deficiencies of Kuchibholta, as indicated above. For example, Kato, like Kuchibholta, discloses *always* using motion information in order to make a coding mode selection.⁷ Hence, Kato does not disclose or suggest the conditional aspect of Applicant's claims. As another example, Westermann discloses a conventional decision logic block that *always* uses motion information in order to make a coding mode selection.⁸

Furthermore, it would not have been obvious to have modified the disclosure of Kuchibholta to have produced the embodiments of the invention recited in claims 4-5, 9-10, 13-17, 30, 32, 35-38, 48, 50, 52, 55, 60, and 66. In particular, a skilled person would have found no rational reason to have modified the disclosure of Kuchibholta. As such, claims 4-5, 9-10, 13-17, 30, 32, 35-38, 48, 50, 52, 55, 60, and 66 are non-obvious over the applied references.

Claims 18-22, 24, 25, 27, 33-34, 39-44 and 62-65

Kuchibholta fails to teach or suggest all the elements of independent claims 18, 24, 25, 27, and 62. Claim 18 is directed to a method for selectively reducing processing cycles of a video codec, comprising receiving a configuration signal, and configuring at least one variable

⁷ Kato, FIG. 8 and col. 10, lines 18-23.

⁸ Westermann, FIG. 6 and col. 6, lines 46-50.

within a complexity control algorithm in accordance with the configuration signal, wherein the complexity control algorithm categorizes portions of a predictive video frame as nonpredictive portions when texture information of the portions indicates there is less than or equal to a predetermined amount of spatial information, uses motion information to determine whether to categorize the portions as predictive portions if the texture information of the portions indicates there is not less than or equal to the predetermined amount of spatial information, and configuring the at least one variable of the complexity control algorithm increases the number of portions in the predictive video frame characterized as nonpredictive portions based upon the texture information.

Claim 24 is directed to an apparatus for selectively reducing processing cycles of a video codec, comprising a complexity control element configured to receive a configuration signal and to configure at least one variable within a complexity control algorithm in accordance with the configuration signal, wherein the complexity control algorithm categorizes portions of a predictive video frame as nonpredictive portions when texture information of the portions indicates there is less than or equal to a predetermined amount of spatial information, uses motion information to determine whether to categorize the portions as predictive portions if the texture information of the portions indicates there is not less than or equal to the predetermined amount of spatial information, and configuring the at least one variable of the complexity control algorithm increases the number of portions in the predictive video frame characterized as nonpredictive portions based upon the texture information.

Claim 25 is directed to an apparatus for categorizing a portion of a video frame, comprising at least one memory element, and at least one processing element configured to execute a set of instructions stored in the at least one memory element, the set of instructions for using texture information in the portion to determine whether the portion comprises at most a predetermined amount of spatial information, if the texture information indicates that the portion comprises at most the predetermined amount of spatial information, then categorizing the portion as nonpredictive, if the texture information indicates that the portion does not comprise at most a predetermined amount of spatial information, then performing a motion estimation search, using motion information determined during the motion estimation search to determine whether the portion comprises at least a predetermined amount of predictive information, if the motion information indicates that the portion comprises at least the predetermined amount of predictive information, then categorizing the portion as predictive, and if the motion information indicates

that the portion does not comprise at least the predetermined amount of predictive information, then categorizing the portion as nonpredictive.

Claim 27 is directed to an apparatus for selectively reducing processing cycles of a video codec, comprising means for receiving a configuration signal, and means for configuring at least one variable within a complexity control algorithm in accordance with the configuration signal, wherein the complexity control algorithm categorizes portions of a predictive video frame as nonpredictive portions when texture information of the portions indicates there is less than or equal to a predetermined amount of spatial information, uses motion information to determine whether to categorize the portions as predictive portions if the texture information of the portions indicates there is not less than or equal to the predetermined amount of spatial information, and configuring the at least one variable of the complexity control algorithm increases the number of portions in the predictive video frame characterized as nonpredictive portions based upon the texture information.

Claim 62 is directed to a processor-readable storage medium comprising instructions that when executed by a processor cause the processor to receive a configuration signal, and configure at least one variable within a complexity control algorithm in accordance with the configuration signal, wherein the complexity control algorithm categorizes portions of a predictive video frame as nonpredictive portions when texture information of the portions indicates there is less than or equal to a predetermined amount of spatial information, uses motion information to determine whether to categorize the portions as predictive portions if the texture information of the portions indicates there is not less than or equal to the predetermined amount of spatial information, and configuring the at least one variable of the complexity control algorithm increases the number of portions in the predictive video frame characterized as nonpredictive portions based upon the texture information.

As seen above independent claims 18, 24, 25, 27, and 62 recite elements similar to elements recited in claim 1. Thus, for reasons similar to those presented above with respect to claim 1, Kuchibholta also fails to teach or suggest all the elements of independent claims 18, 24, 25, 27, and 62. Each of claims 19-22, 33-34, 39-44, and 63-65 depend either directly or indirectly from independent claims 18, 24, 25, 27, and 62, making them patentable as well over Kuchibholta. The addition of any disclosure in Westermann, Kato, Sun, and/or Kodama does nothing to remedy the deficiencies of Kuchibholta, as indicated above.

Furthermore, Kuchibholta fails to teach or suggest “configuring at least one variable within a complexity control algorithm in accordance with the configuration signal” where “configuring the at least one variable of the complexity control algorithm increases the number of portions in the predictive video frame characterized as nonpredictive portions based upon the texture information,” as required by claim 18. Kuchibholta does *not* disclose such a variable. Although the Examiner points to element 126 in FIG. 1, and the comparison of the variance of the residual macroblock and the variance of the input macroblock as disclosing such a variable, none of these are a variable that may be configured. Rather, element 126 is the motion vector predictor. And, variances are *not* variables and are certainly *not* configurable variables. Instead, a variance is a *measure* of statistical dispersion. For example, in Applicant’s disclosure, a variance is calculated for each macroblock and used to estimate the texture bits. Although the average variance of a frame may be scaled by a configurable variable in order to aid in determining the coding mode, as disclosed in Applicant’s specification at paragraph [0043], a variance is not itself a variable that can be configured. As such, Kuchibholta does not teach or suggest “configuring at least one variable within a complexity control algorithm in accordance with the configuration signal” where “configuring the at least one variable of the complexity control algorithm increases the number of portions in the predictive video frame characterized as nonpredictive portions based upon the texture information,” as required by claim 18. Claims 24, 27, and 62 recite elements similar to claim 18 and, as such, are further patentable over Kuchibholta.

By virtue of their dependency on one of independent claims 18, 24, 25, 27, and 62, dependent claims 19-22, 33-34, 39-44, and 63-65 incorporate all the elements of the independent claim from which they depend, and add additional features. Applicant requests that the rejection be withdrawn and that claims 18-22, 24, 25, 27, 33-34, 39-44 and 62-65 be allowed.

Furthermore, it would not have been obvious to have modified the disclosure of Kuchibholta to have produced the embodiments of the invention recited in claims 18-22, 24, 25, 27, 33-34, 39-44 and 62-65. In particular, a skilled person would have found no rational reason to have modified the disclosure of Kuchibholta. As such, claims 4-5, 9-10, 13-17, 30, 32, 35-38, 48, 50, 52, 55, 60, and 66 are non-obvious over the applied references.

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Amendment dated June 16, 2009
Response to Office Action of March 16, 2009

CONCLUSION

In light of the arguments contained herein, Applicants submit that the application is in condition for allowance, for which early action is requested.

Please charge any fees or overpayments that may be due with this response to Deposit Account No. 17-0026.

Respectfully submitted,

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